

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/12/97

Date Received: 07/31/97

Project: PO #M57983

Date Samples Extracted: 08/05/97

Date Extracts Analyzed: 08/06/97

**RESULTS FROM THE ANALYSIS OF THE WATER SAMPLE  
FOR CHROMIUM, COPPER, NICKEL, ZINC  
USING METHOD 6010**

**Samples Processed Using Method 3005A**

Results Reported as mg/L (ppm)

| <u>Sample ID</u> | <u>Chromium</u> | <u>Copper</u> | <u>Nickel</u> | <u>Zinc</u> |
|------------------|-----------------|---------------|---------------|-------------|
| PO #M57983       | 0.44            | 0.47          | 0.52          | <0.05       |
| Method Blank     | <0.05           | <0.05         | <0.05         | <0.05       |

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## ENVIRONMENTAL CHEMISTS

Date of Report: 08/12/97

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Project: PO #M57983

### QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS BY INDUCTIVELY COUPLED PLASMA (ICP) (METHOD 6010)

Laboratory Code: 79864 (Duplicate)

| Analyte: | Reporting<br>Units | Sample<br>Result | Duplicate<br>Result | Relative<br>Percent<br>Difference | Acceptance<br>Criteria |
|----------|--------------------|------------------|---------------------|-----------------------------------|------------------------|
| Chromium | mg/L (ppm)         | 0.44             | 0.46                | 4                                 | 0-20                   |
| Copper   | mg/L (ppm)         | 0.47             | 0.48                | 2                                 | 0-20                   |
| Nickel   | mg/L (ppm)         | 0.52             | 0.56                | 7                                 | 0-20                   |
| Zinc     | mg/L (ppm)         | <0.05            | 0.05                | nm                                | 0-20                   |

Laboratory Code: 79864 (Matrix Spike)

| Analyte: | Reporting<br>Units | Spike<br>Level | Sample<br>Result | % Recovery<br>MS MSD |    | Acceptance<br>Criteria | Relative<br>Percent<br>Difference |
|----------|--------------------|----------------|------------------|----------------------|----|------------------------|-----------------------------------|
| Chromium | mg/L (ppm)         | 5              | 0.44             | 90                   | 82 | 80-120                 | 9                                 |
| Copper   | mg/L (ppm)         | 5              | 0.47             | 82                   | 81 | 80-120                 | 1                                 |
| Nickel   | mg/L (ppm)         | 10             | 0.52             | 86                   | 81 | 80-120                 | 6                                 |
| Zinc     | mg/L (ppm)         | 5              | <0.05            | 79 vo                | 80 | 80-120                 | 1                                 |

Laboratory Code: Spike Blank

| Analyte: | Reporting<br>Units | Spike<br>Level | % Recovery<br>MS MSD |    | Acceptance<br>Criteria | Relative<br>Percent<br>Difference |
|----------|--------------------|----------------|----------------------|----|------------------------|-----------------------------------|
| Chromium | mg/L (ppm)         | 5              | 86                   | 85 | 80-120                 | 1                                 |
| Copper   | mg/L (ppm)         | 5              | 85                   | 83 | 80-120                 | 2                                 |
| Nickel   | mg/L (ppm)         | 10             | 86                   | 85 | 80-120                 | 1                                 |
| Zinc     | mg/L (ppm)         | 5              | 84                   | 83 | 80-120                 | 1                                 |

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

vo - The value reported fell outside of control limits established for this analyte.

**FRIEDMAN & BRUYA, INC.**

**ENVIRONMENTAL CHEMISTS**

James E. Bruya, Ph.D.  
Charlene Jensen, M.S.  
Bradley T. Benson, B.S.  
Kurt Johnson, B.S.

3012 16th Avenue West  
Seattle, WA 98119-2029  
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e-mail: fbi@isomedia.com

**August 12, 1997**

**DUPLICATE  
INVOICE # 97ACU0812-1**

Accounts Payable  
Alaskan Copper Works  
628 South Hanford St.  
Seattle, WA 98134

**RE: Project PO #M57983: Results of testing requested by Gerry Thompson  
for material submitted on July 31, 1997.**

**1 water sample analyzed for  
Chromium, Copper, Nickel, and Zinc  
using Method 6010 @ \$65 per sample**

**\$ 65.00**

**Amount Due .....**

**\$ 65.00**

**FEDERAL TAX ID # (b) (6)**

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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August 12, 1997

Gerry Thompson, Project Manager  
Alaskan Copper Works  
628 South Hanford St.  
Seattle, WA 98134

Dear Mr. Thompson:

Included are the results from the testing of material submitted on July 31, 1997 from your PO #M57983 project. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

A handwritten signature in black ink, appearing to be 'Kurt Johnson', written over a horizontal line.

Kurt Johnson  
Chemist

keh  
Enclosures

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